

**TWO NEW FLAT BUG SPECIES FROM NORTH AMERICA  
(HETEROPTERA: ARADIDAE)**

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*Abstract.*—Two new North American species (*Aradus froeschneri* and *Neuroctenus unistellatus*) are described.

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During my stay in the United States, through the ICOM/AAM International Partnership Amongst Museums program, I had the possibility to study the collections of the National Museum of Natural History, Washington, and the American Museum of Natural History, New York, and to collect some flat bug species. In the course of investigations some new species were found, of which two are described here.

***Aradus froeschneri*, new species**

Figs. 1–5

Macropterous, brownish, tip of antennal joint 2, 3, 4, head, anterior lobe of pronotum, basis of scutellum and legs dark brown, partly with yellowish granulation.

Head 1.2 times as long as wide across eyes (Fig. 1). Anterior process robust, reaching beyond  $\frac{1}{4}$  of antennal joint 2. Antenna long, joint 2 thickening towards apex, 3 and 4 cylindrical, subequal in length. Antennal formula 10:54:18:18. Antenniferous tubercle strong, pointed, lateral tooth blunt. Postocular tubercle with strong, transversely directed apical tubercle (granule). Rostrum reaching near to hind margin of mesosternum.

Pronotum more than 2 times as wide as long, widest beyond middle. Fore disc strongly convex, with white granules medially and laterally and smooth between them and the carinae. Hind disc rising posteriorly. Lateral margin reflexed, more steep anteriorly, with large teeth decreasing in size towards rounded PE angles.

Scutellum lacking apical half. Basal part elevated, with yellow and reddish granulation, margins reflexed, parallel.

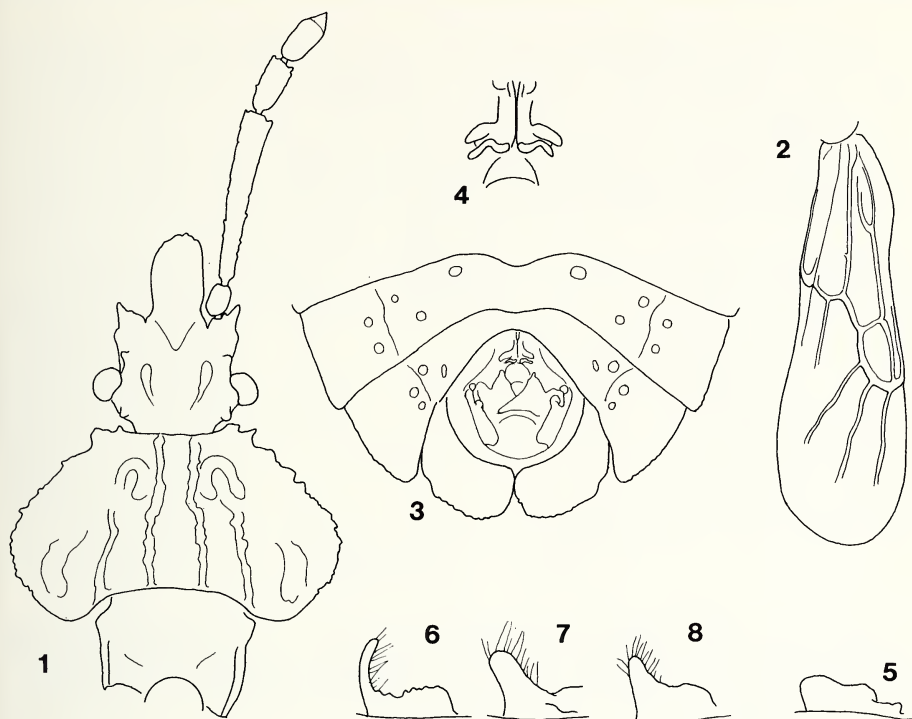
Hemelytra light brown, basal dilation moderate, reflexed (Fig. 2).

Abdomen oval, PE angles of dorsolaterotergites (DLTGs) sharply rounded, slightly protruding. Tip of abdomen on Figure 3.

Male genitalia: Tergite 9 comprising two lobes both positioned subvertically, the anterior one thin, transparent (Fig. 4). Paramere broad, large, with longish, narrowing apex posteriorly and small tooth directed anteriorly. Parandrium about the same in height along the whole length (Fig. 5).

Measurements: total length of body about 8.5 mm, length of head 1.58 mm, width of head 1.33 mm, length of pronotum 1.2 mm, width of pronotum 2.6 mm, width of scutellum 1.2 mm, maximum width of abdomen 3.7 mm.

Holotype, male, damaged, but critical body parts present (only tip of scutellum missing): "Pinehurst, Calif. III. 27. '34.," "R. L. Usinger collection," "collection N.



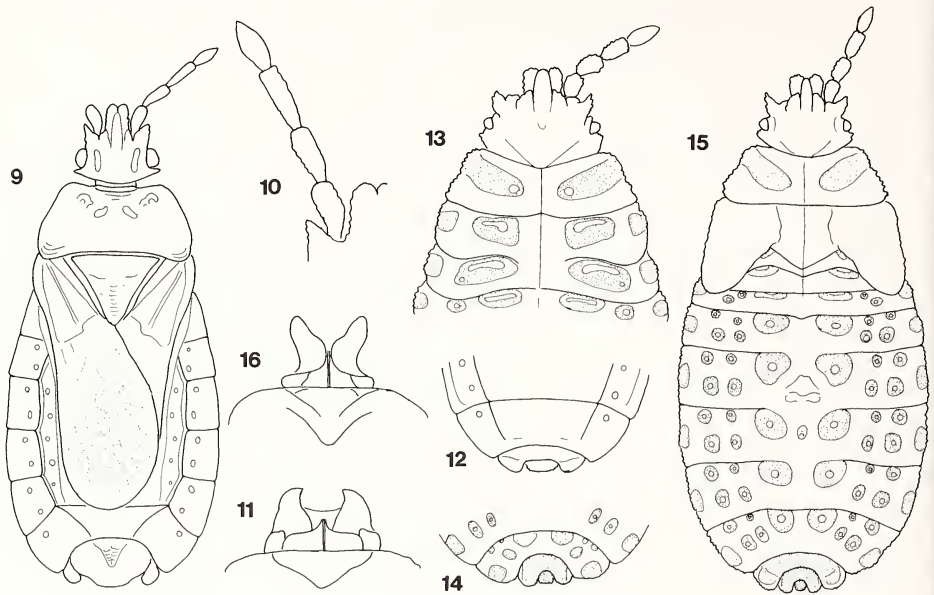
Figs. 1–8. 1–5 = *Aradus froeschneri* sp. n., 6 = *A. inornatus* Uhler, 7 = *A. acutus* Say, 8 = *A. blaisdelli* Van Duzee, 1 = head and pronotum, 2 = hemelytra, 3 = tip of male abdomen, 4 = tergite 9, 5–8 = parandria.

Kormilev,” “*Aradus blaisdelli* VD. det R. L. Usinger '49,” “C. J. Drake collection 1956.” Deposited in the National Museum of Natural History, Washington.

The species is dedicated to Dr. R. C. Froeschner, Curator of Hemiptera in the NMNH and excellent contributor to our knowledge of Aradidae.

In spite of the fact that the new species runs in the key of Torre-Bueno (1939) to, and the sole specimen was identified as *A. blaisdelli*, considering other body characters than the long second antennal joint, it is more closely allied to *A. acutus* Say. The new species can be distinguished from three related species, *blaisdelli* Van Duzee, *acutus* Say and *inornatus* Uhler, besides measurements and other features, by the shape of the parandrium (Figs. 6–8), or the shape of tergite 9 being bilobate in all species of the *acutus* species group but the two lobes more dorsoventrally flattened (“horizontally”) in the afore mentioned three. It differs from *paganicus* Parshley, respectively, by several features. Antennal formula is 12:54:18:16 in *paganicus*, rostrum reaches to the middle of mesosternum, ratio of width of head to length of pronotum is different (28:30), margin of pronotum is more serrate, etc.

It should be mentioned here, that the drawings of Matsuda (1977) of *A. paganicus* contradict the photographs. A revision of the species of the *acutus*-group (*betulae*-group in the Old World) seems to be necessary.



Figs. 9–16. 9–15 = *Neuroctenus unistellatus* sp. n., 16 = *N. simplex* Kormilev, 9 = total drawing of adult male, 10 = antenna, 11, 16 = paramer in situ, 12 = tip of abdomen of female, 13 = head and pronotum of fourth instar larva, 14 = same, tip of abdomen, 15 = total drawing of fifth instar larva.

***Neuroctenus unistellatus*, new species**  
(Figs. 9–15)

Macropterous (Fig. 9), nearly unicolorous dark brown, base of membrane whitish.

Head about as long as wide. Anterior process reaching beyond tip of antennal joint 1. Antenniferous tubercle strong, pointed, lateral borders diverging. Antennal joint 1 and 2 club shaped, 3 subcylindrical, 4 spindle form (Fig. 10). Antennal formula: 25:25:27:23 (male), 25:25:28:22 (female). Infraocular carina distinct, low. Postocular tubercle in most cases pointed and reaching beyond outer border of eyes. Vertex slightly convex, evenly covered with granules.

Pronotum trapezoidal, 2.3–2.4 times as wide as long. Anterolateral angles rounded. Disc with 2 shiny callous spots and with 1 mediolateral and 1 lateral depression on each side, separating fore and hind disc. PE angles sharply rounded, produced posteriorly, wrinkled under granulation.

Scutellum triangular, 1.4 times as wide as long. Lateral margin slightly arched, concave, elevated except at the tip. Disc with transverse wrinkles along median line on the posterior  $\frac{2}{3}$ .

Abdomen oval. PE angles of DLTGs slightly protruding against anterior angles of the next DLTG. DLTG 3–6 with distinct sublateral, longitudinal carina on females, sometimes with signs of such on males.

Genitalia: Tip of abdomen depicted on Figures 9 and 11. Parameres in situ also figured (Fig. 15).

Larvae: only fourth (Figs. 13–14) and fifth (Fig. 15) instar larvae available. They are yellowish white with brown rows of apodemal impressions. Length is about 3 mm in the fourth and 4 mm in the fifth instar. Head is 1.45 times as wide as long on the fourth and 1.2 times as wide as long on the fifth instar. Antennal formula is 20:25:25:30 for the fourth and 20:23:29:28 for the fifth instar. They fit into the picture drawn for the postembryonal development of *Neuroctenus* (Vásárhelyi, 1988) including changes in the antennal formula, in the development of sclerites on the head, pronotum and the tip of abdomen (Figs. 13–15).

Measurements (averages of 3–3 specimens, first the male then the female data are given): total length of body 4.1–4.4 mm, length of head 0.7–0.72 mm, width of head 0.7 mm, length of pronotum 0.57–0.58 mm, width of pronotum 1.33–1.40 mm, length of scutellum 0.63–0.68 mm, width of scutellum 0.88–0.93 mm, maximum width of abdomen across segment 5 and 4 respectively 1.83–1.93 mm.

Holotype (male) and paratypes (15 males, 12 females, 11 larvae): USA, Texas, Austin, Brakenridge Field Lab., 550 ft. "10. 05. 1991. leg T. Vásárhelyi and C. R. Nelson." One male and one female deposited in each of the National Museum of Natural History (Washington) and in the American Museum of Natural History (New York), the holotype male and 12 males, 10 females and 11 larvae deposited in the Hungarian Natural History Museum, Budapest.

Natural History Museum, Budapest.

It is a pleasure to dedicate this new species to the "Lone Star State" and its helpful and friendly citizens.

The new species cannot be identified by the key of Torre-Bueno (1939), because the apex of head is distinctly cleft on many specimens but is not distinctly cleft on some. Scutellum with traces of a faint median carina apically, i.e., transversely rugose posteriorly. Abdomen is broadly oval. This character set separates it from all other species included in the key. The new species is closely allied to both *N. rossi* Kormilev and *N. simplex* Kormilev. In *rossi* the antenna is thicker, with joint 1 surpassing tip of anterior process of head, anterolateral border of pronotum cut out in an obtuse angle, and the sclerite bearing the mediolateral apodemal impressions is much narrower. In *simplex* antennal joint 4 is relatively longer, the anterolateral border of pronotum straight or slightly concave, the apical border of corium bisinuate, the wings are not bordered by carinae on the abdomen of the male, and the tip of abdomen is different (Fig. 16).

#### LITERATURE CITED

- Kormilev, N. A. 1973. Neotropical Aradidae in the Musée National d'Histoire Naturelle, Paris. Ann. Soc. Ent. Fr. N.S. 9(3):735–746.
- Kormilev, N. A. 1975. Neotropical Aradidae in the collection of the California Academy of Sciences. Occ. Papers CAS, N. 122, 28 pp.
- Matsuda, R. 1977. The Aradidae of Canada (Hemiptera: Aradidae). Pages 1–106 in: The Insects and Arachnids of Canada. Part 3. Research Branch, Canada Department of Agriculture, Publication 1634.
- Parshley, H. M. 1921. Essay on the American species of *Aradus* (Hemiptera). Trans. Am. Ent. Soc. 47:1–106.
- Parshley, H. M. 1929. New species and new records of *Aradus* (Aradidae, Hemiptera). Canad. Ent. 61:243–246.

- Torre-Bueno, J. R. 1939. A synopsis of the Hemiptera-Heteroptera of America North of Mexico. *Entomol. Amer. N. S.* 19(3):141-304.
- Vásárhelyi, T. 1988. Description of the adults and the postembryonal development of *Neuroctenus subserrulatus* sp. n. (Heteroptera: Aradidae). *Acta Zool. Hung.* 34(1):27-36.

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